

~~Claims~~What Is Claimed Is

1. A method for transmitting signaling and control information for wavelength-division multiplex (WDM) networks (1) for optical, fiber-bound information transfer in digitized form, useful information being optically encoded or decoded using a terminal (2 and 8, respectively) and, in the form of an optical signal of defined fundamental wavelength, being fed into or removed from the optical network at a network terminator (3 and 7, respectively), a plurality of signals of different wavelengths being transmitted collectively in an optical fiber, and the signaling and control information being generated or analyzed in the network terminator (3 and 7, respectively) or in a further network element (4,5,6) and being fed into or removed from the network (1), characterized in that, using a time-division multiplex method, the signaling and control information is transmitted with the same fundamental wavelength via the same network components as the corresponding useful information signal, the signaling and control information being able to be modulated independently of the useful information.
2. The method according to Claim 1, characterized in that the signaling and control information contains a characteristic signal sequence by which it can be identified in the signal stream of the useful signal, thereby synchronizing the corresponding transmitters and receivers of the signaling and control information.
3. The method according to Claim 1 or 2, characterized in that the signaling and control information is transmitted at regular time intervals T for a duration of T_{OH} .

4. The method according to Claim 3, characterized in that T is a multiple of the characteristic clock pulse duration of the useful information.
5. The method according to Claim 3 or 4, characterized in that the synchronization between transmitter and receiver of the signaling and control information is accomplished by a characteristic signal transmitted at short intervals, following synchronization, the characteristic signal being transmitted at time intervals which gradually increase up to the final value T .
6. The method according to any one of Claims 3 to 5, characterized in that during the transmission of the signaling and control information, the transmission of the useful information is interrupted for a duration of $T_{OH} + 2\delta$, the time interval δ existing between the suppression of the useful information and the transmission of the signaling and control information.
7. The method according to Claim 6, characterized in that during the transmission pause of $T_{OH} + 2\delta$ resulting from the transmission of the signaling and control information, the useful information is buffered in the transmitting terminal equipment, e.g. using shift registers, and, in the intervening interval $T - T_{OH} + 2\delta$, is transmitted at such an increased bit rate that the average bit rate corresponds to the case of uninterrupted useful information transfer.
8. The method according to Claim 6 or 7, characterized in that the transmitting terminal reserves time gaps of width $T_{OH} + 2\delta$ in the useful signal and signals the temporal position thereof via the network terminator to the network element transmitting the signaling and control information.
9. The method according to Claim 6 or 7, characterized in that the network terminator informs the transmitting terminal of when a time gap of width $T_{OH} + 2\delta$ in the useful signal is to be reserved for the transmission of the signaling and control information, and of when the useful signal, if required, is to be buffered.
10. The method according to any one of Claims 3 to 5, characterized in that the signaling and control information overwrites the useful information during the transmission interval T_{OH} .

11. The method according to any one of the preceding claims, characterized in that the interference of the useful signal caused by the transmission of the signaling and control information is corrected by an error correction algorithm, which is optimized for such block interferences.

12. The method according to any one of the preceding claims, characterized in that to transmit the useful information, a line code is used, which is fault-tolerant with respect to interference caused by the transmission of the signaling and control information, particularly with respect to block interferences.

13. The method according to any one of the preceding claims, characterized in that the network terminator communicates the signaling and control information to the transmitting terminal, which optically encodes it and transmits it via the network, with the encoded useful information to the receiving terminal, which decodes the signal, filters out the signaling and control information from the useful signal, and communicates it to the upstream receiver-end network terminator.

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